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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/269,503	03/29/1999	YASUSHI KANEKO	990348	1116
38834	7590	12/02/2003	EXAMINER	
WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP 1250 CONNECTICUT AVENUE, NW SUITE 700 WASHINGTON, DC 20036			RUDE, TIMOTHY L	
			ART UNIT	PAPER NUMBER
			2871	

DATE MAILED: 12/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

car

Office Action Summary	Application N .	Applicant(s)	
	09/269,503	KANEKO ET AL.	
	Examiner	Art Unit	
	Timothy L Rude	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 September 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,6,8,10-12,14 and 16-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,6,8,10-12,14 and 16-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
 a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims

1. Claims 1, 2, 17, and 18 are amended.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

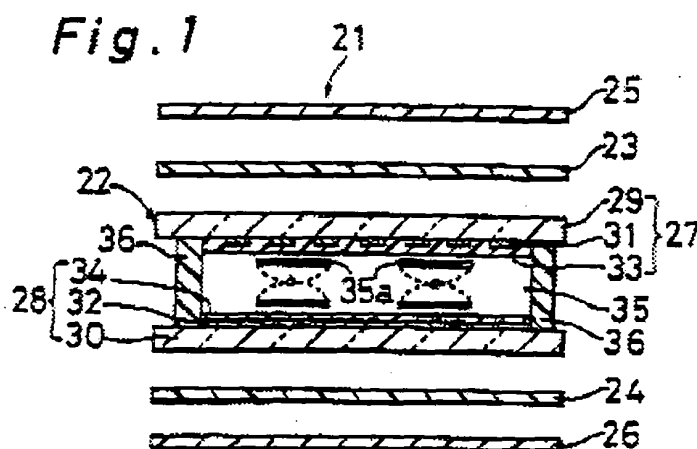
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ouderkirk et al (Ouderkirk) USPAT 6124971 in view of Nakanishi et al (Nakanishi) USPAT 5,587,821.

As to Claim 1, Ouderkirk discloses the use of a reflective polarizer (col. 16, lines 30-48), a front dichroic polarizer (col. 16, lines 48-49), and a light absorbing member outside the reflective polarizer (col. 17, lines 9-11).

Ouderkirk differs from the claimed invention because he does not disclose the use of a super twisted nematic liquid crystal, a retardation film having relations of $n_x > n_z > n_y$.

Nakanishi discloses in the Summary of the Invention, a super twisted nematic liquid crystal cell having electrodes, 31 and 32, a retardation film, 23, outside second substrate, an absorption-type polarizer, 25, outside the retardation film. Nakanishi also discloses the use of one or more retardation films with the relationship $n_z = (n_x - n_z)/(n_x - n_y)$, where $0 < n_z < 0.5$ (col. 5, lines 10-15) which satisfies $n_x > n_z > n_y$ for all values of $n_z > 0$ to compensate for liquid crystal layer birefringence to obtain excellent display quality in both of the opposing viewing angle directions (Abstract).



Nakanishi teaches that his compensator is applicable to reflective displays (col. 15, lines 26-31). Note that satisfactory compensation of n_x , n_y , and n_z of Nakanishi would result in light compensation that is substantially polarized light during passage through the absorption-type polarizing film, the retardation film, and the super twisted nematic liquid crystal cell, in a state with no voltage applied, as evidenced by the excellent display quality in both of the opposing viewing angle directions.

Nakanishi is evidence that ordinary workers in the art would find the reason, suggestion, or motivation for a super twisted nematic liquid crystal cell having electrodes, a retardation film outside second substrate having relations of $n_x > n_z > n_y$, and a diffuser disposed on the outside surface of the absorption-type polarizer to obtain excellent display quality in both of the opposing viewing angle directions.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the liquid crystal display of Ouderkirk with the super twisted nematic liquid crystal cell having electrodes, a retardation film outside second substrate having relations of $n_x > n_z > n_y$, an absorption-type polarizer outside the retardation film of Nakanishi to obtain excellent display quality in both of the opposing viewing angle directions.

Please note Applicant's added limitations regarding performance and orientation of polarizers and retarders pertain to well known details of configuring said polarizers and retardation films to achieve proper polarization and birefringence compensation in a liquid crystal display device used in either normally black or normally white mode. Clearly those of ordinary skill in the art of liquid crystals at the time the claimed invention was made had the knowledge and motivation to set polarization axes to achieve best contrast in either normally black or normally white mode for a super twisted nematic liquid crystal cell, and they had the knowledge and motivation to set the amount of retardation value of the retardation film to compensate for the retardation of the super twisted nematic liquid crystal layer. These are long-standing routine steps in the

construct of a satisfactory super twisted nematic liquid crystal display device with improved contrast (Applicant's light increasing means). The applied prior art is considered to meet Applicant's added limitations as these details of construction were routine at the time the prior art was disclosed to comprise satisfactory displays with improved contrast (Applicant's light increasing means).

3. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ouderkirk in view of Crawford et al (Crawford) USPAT 5867240, Kikuchi et al (Kikuchi) USPAT 5440413, and Arakawa USPAT 5528400.

As to Claim 1, Ouderkirk discloses the use of a reflective polarizer (col. 16, lines 30-48), a front dichroic polarizer (col. 16, lines 48-49), and a light absorbing member outside the reflective polarizer (col. 17, lines 9-11).

Ouderkirk differs from the claimed invention because he does not disclose the use of a super twisted nematic liquid crystal, a retardation film having relations of $n_x > n_z > n_y$.

Crawford discloses in claim 4 a super twisted nematic liquid crystal cell having electrodes (claim 1, A, ii), a retardation film outside second substrate (claim 1, C and 1, E), an absorption-type polarizer outside the retardation film (claim 1, B), and a diffusion

layer outside the absorption-type polarizer (col. 2, lines 35-38). Crawford also discloses as prior art the use of one or more retardation films with the relationship $n_x > n_z > n_y$ (col. 2, lines 55-63) to compensate for liquid crystal layer birefringence. Use of films with the relationship $n_x > n_z > n_y$ are also disclosed by Kikuchi (col. 8, lines 29-45) and Arakawa (col. 3, lines 19-64). Note that satisfactory compensation of n_x , n_y , and n_z of Kikuchi and Arakawa would result in light compensation that is substantially polarized light during passage through the absorption-type polarizing film, the retardation film, and the super twisted nematic liquid crystal cell, in a state with no voltage applied, as evidenced by the excellent display quality in both of the opposing viewing angle directions.

Accordingly, as evidenced by Crawford, Kikuchi, and Arakawa, ordinary workers in the art would find the reason, suggestion, or motivation for a super twisted nematic liquid crystal cell having electrodes, a retardation film outside second substrate having relations of $n_x > n_z > n_y$, and a diffuser disposed on the outside surface of the absorption-type polarizer, and they are applicable to a reflective type display as evidenced by Nakanishi above.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the liquid crystal display of Ouderkirk with the super twisted nematic liquid crystal cell having electrodes, a retardation film outside second substrate having relations of $n_x > n_z > n_y$, an absorption-type polarizer outside the retardation film of Crawford to improve display performance.

Please note Applicant's added limitations regarding performance and orientation of polarizers and retarders pertain to well known details of configuring said polarizers and retardation films to achieve proper polarization and birefringence compensation in a liquid crystal display device used in either normally black or normally white mode. Clearly those of ordinary skill in the art of liquid crystals at the time the claimed invention was made had the knowledge and motivation to set polarization axes to achieve best contrast in either normally black or normally white mode for a super twisted nematic liquid crystal cell, and they had the knowledge and motivation to set the amount of retardation value of the retardation film to compensate for the retardation of the super twisted nematic liquid crystal layer. These are long-standing routine steps in the construct of a satisfactory super twisted nematic liquid crystal display device with improved contrast (Applicant's light increasing means). The applied prior art is considered to meet Applicant's added limitations as these details of construction were routine at the time the prior art was disclosed to comprise satisfactory displays with improved contrast (Applicant's light increasing means).

4. Claims 2, 4, 6, 14, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ouderkirk in view of Crawford, as applied above, and further in view of Bosma et al, USPAT 5576077 (Bosma).

As to Claim 2, the only limitation that differs from claim 1 is the twisted retardation film not disclosed by Ouderkirk in view of Crawford. Bosma discloses the use of a twisted retardation layer between the absorption-type polarizing film and the second substrate. Accordingly, as evidenced by Bosma, ordinary workers in the art would recognize the benefit of a twisted retardation layer. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the liquid crystal display of Ouderkirk in view of Crawford with the twisted retardation layer of Bosma to better compensate the super twisted nematic liquid crystal.

Please note Applicant's added limitations regarding performance and orientation of polarizers and retarders pertain to well known details of configuring said polarizers and retardation films to achieve proper polarization and birefringence compensation in a liquid crystal display device used in either normally black or normally white mode. Clearly those of ordinary skill in the art of liquid crystals at the time the claimed invention was made had the knowledge and motivation to set polarization axes to achieve best contrast in either normally black or normally white mode for a super twisted nematic liquid crystal cell, and they had the knowledge and motivation to set the amount of retardation value of the retardation film to compensate for the retardation of the super

twisted nematic liquid crystal layer. These are long-standing routine steps in the construct of a satisfactory super twisted nematic liquid crystal display device with improved contrast (Applicant's light increasing means). The applied prior art is considered to meet Applicant's added limitations as these details of construction were routine at the time the prior art was disclosed to comprise satisfactory displays with improved contrast (Applicant's light increasing means).

As to Claims 4 and 6, Crawford discloses the use of various diffusion layers (or sheets) on the viewer side of the display device to improve viewing angle in column 2, lines 25 – 63.

As to Claim 14, Ouderkirk discloses the use of a backlight and an absorbing film between the backlight and the reflective polarizer to provide backside illumination with good contrast in claims 19 and 30.

As to Claim 16, Ouderkirk discloses the use of a diffuser between the first substrate and the reflection-type polarizer to provide diffuse reflection of one polarization and transmission of the other polarization in claim 1.

5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ouderkirk in view of Crawford and Bosma, as applied above, and further in view of Minowa et al, USPAT 4697885 (Minowa).

As to Claim 8, Ouderkirk discloses the use of a dichroic polarizer (claim 2), but he does not specify a color polarizing film. Minowa discloses the use of a color polarizer in Figure 1 and column 1, lines 29 – 38. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the liquid crystal display of Ouderkirk in view of Crawford and Bosma with the color polarizer of Minowa to achieve desired color effects.

6. Claims 10 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ouderkirk in view of Crawford and Bosma, as applied above, and further in view of Yang et al, USPAT 5847798 (Yang).

As to Claim 10, Ouderkirk discloses the use of an absorbing layer (claims 8, 9, and 10), but he does not specify any color other than black. Yang discloses the use of a color absorption layer in Figure 7, and column 13, lines 46 – 49. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the liquid crystal display of Ouderkirk in view of Crawford with the color absorption layer of Yang to achieve desired color effects.

As to Claim 17, Ouderkirk discloses the use of an absorbing layer (claims 8, 9, and 10), but he does not specify any color other than black. Yang discloses the use of a color absorption layer in Figure 7, and column 13, lines 46 – 49. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the liquid crystal display of Ouderkirk in view of Crawford with the color absorption layer of Yang to achieve desired color effects.

Please note Applicant's added limitations regarding performance and orientation of polarizers and retarders pertain to well known details of configuring said polarizers and retardation films to achieve proper polarization and birefringence compensation in a liquid crystal display device used in either normally black or normally white mode. Clearly those of ordinary skill in the art of liquid crystals at the time the claimed invention was made had the knowledge and motivation to set polarization axes to achieve best contrast in either normally black or normally white mode for a super twisted nematic liquid crystal cell, and they had the knowledge and motivation to set the amount of retardation value of the retardation film to compensate for the retardation of the super twisted nematic liquid crystal layer. These are long-standing routine steps in the construct of a satisfactory super twisted nematic liquid crystal display device with improved contrast (Applicant's light increasing means). The applied prior art is considered to meet Applicant's added limitations as these details of construction were routine at the time the prior art was disclosed to comprise satisfactory displays with improved contrast (Applicant's light increasing means).

7. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ouderkirk in view of Crawford, as applied above, and further in view of Ebihara et al, USPAT 5990995 (Ebihara).

As to Claim 11, Ouderkirk in view of Crawford does not disclose the use of a solar cell. Ebihara discloses the use of a solar cell (Figure 11) column 8, lines 3 – 21. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the liquid crystal display of Ouderkirk in view of Crawford with the solar cell of Ebihara to convert light energy into electricity.

8. Claims 12 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ouderkirk in view of Crawford and Bosma, as applied above, and further in view of Ebihara et al, USPAT 5990995 (Ebihara).

As to Claim 12, Ouderkirk in view of Crawford and Bosma does not disclose the use of a solar cell. Ebihara discloses the use of a solar cell (Figure 11) column 8, lines 3 – 21. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the liquid crystal display of Ouderkirk in view of Crawford and Bosma with the solar cell of Ebihara to convert light energy into electricity.

As to Claim 18, Ouderkirk in view of Crawford and Bosma does not disclose the use of a solar cell. Ebihara discloses the use of a solar cell (Figure 11) column 8, lines 3 – 21. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the liquid crystal display of Ouderkirk in view of Crawford and Bosma with the solar cell of Ebihara to convert light energy into electricity.

Please note Applicant's added limitations regarding performance and orientation of polarizers and retarders pertain to well known details of configuring said polarizers and retardation films to achieve proper polarization and birefringence compensation in a liquid crystal display device used in either normally black or normally white mode. Clearly those of ordinary skill in the art of liquid crystals at the time the claimed invention was made had the knowledge and motivation to set polarization axes to achieve best contrast in either normally black or normally white mode for a super twisted nematic liquid crystal cell, and they had the knowledge and motivation to set the amount of retardation value of the retardation film to compensate for the retardation of the super twisted nematic liquid crystal layer. These are long-standing routine steps in the construct of a satisfactory super twisted nematic liquid crystal display device with improved contrast (Applicant's light increasing means). The applied prior art is considered to meet Applicant's added limitations as these details of construction were routine at the time the prior art was disclosed to comprise satisfactory displays with improved contrast (Applicant's light increasing means).

Response to Arguments

9. Applicant's arguments filed on 05 September 2003 have been fully considered but they are not persuasive.

Applicant's ONLY arguments are as follows:

(1) $n_x > n_z > n_y$ of the prior art is not the same as $n_x > n_z > n_y$ of the instant Application.

(2) Nakanishi does not disclose a reflection-type polarizing film.

(3) Prior art does not teach a retardation film and a reflection-type polarizing film constitute a reflection light increasing means.

Examiner's responses to Applicant's ONLY arguments are as follows:

(1) It is respectfully pointed out that Applicant provides no reason (no Argument) as to why $n_x > n_z > n_y$ is not the same as Applicant's $n_x > n_z > n_y$. Examiner believes the prior art does in fact teach Applicant's $n_x > n_z > n_y$ with proper motivation to obtain excellent display quality (Applicant's light increasing means).

(2) It is respectfully pointed out that the primary reference, Ouderkirk, discloses a reflection-type polarizing film, per rejections above.

(3) It is respectfully pointed out that Applicant's "reflection light increasing means" is a matter of lexicography. Prior art teaches the use of a reflective polarizer to reflect light, and prior art teaches the use of a retardation film to improve display quality, i.e., contrast and brightness (Applicant's reflection light increasing means).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

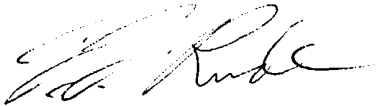
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy L Rude whose telephone number is (703) 305-0418. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H Kim can be reached on (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

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Art Unit: 2871

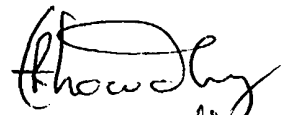
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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4900.



Timothy L Rude
Examiner
Art Unit 2871

TLR
November 25, 2003



T. Chowdhury
Primary Examiner